(No Model.) 4 Sheets—Sheet 1.

J. P. CLEAL.

CASH REGISTER AND INDICATOR.

No. 600,136. Patented Mar. 8, 1898.

Fig. 1.

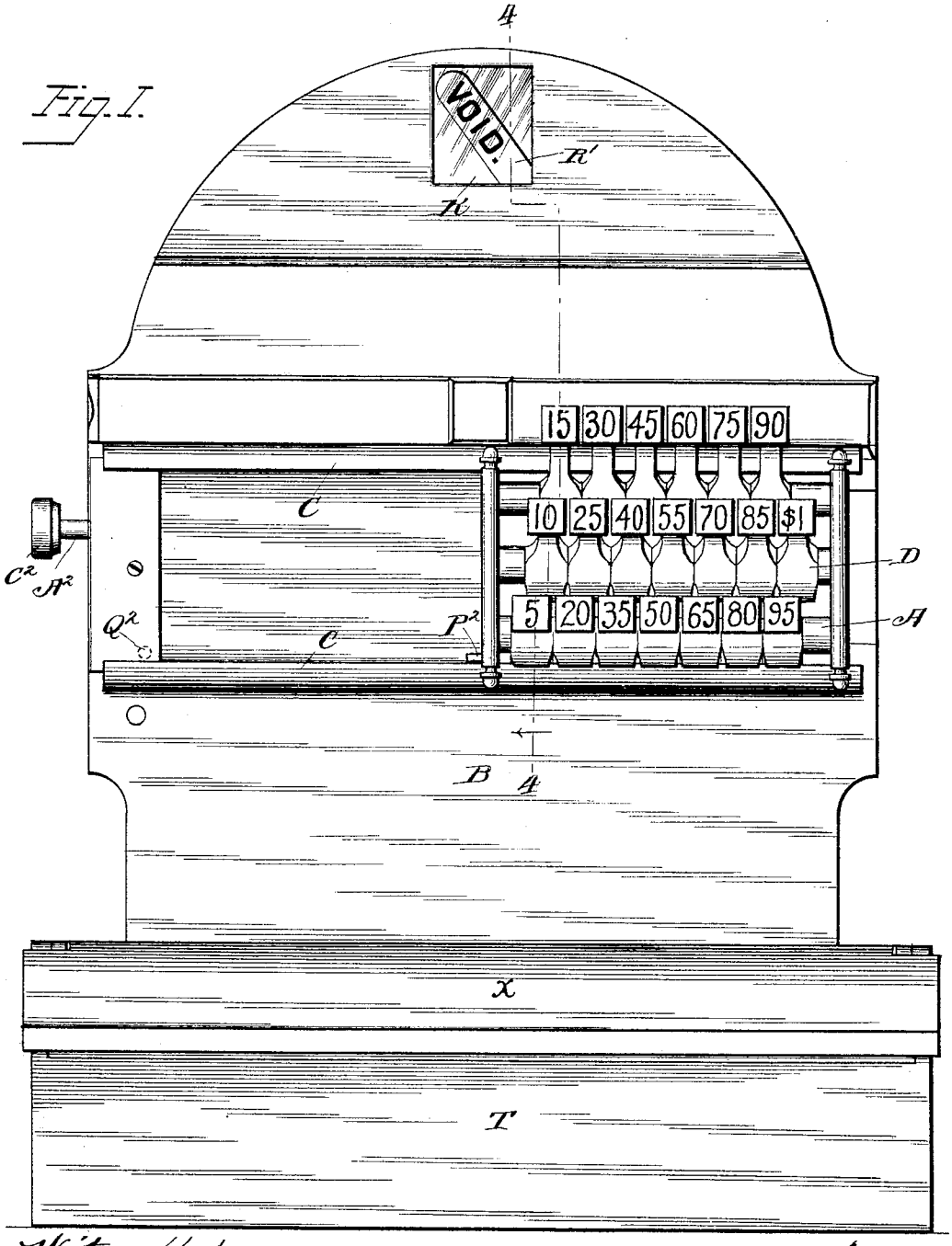

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Fig. 2.

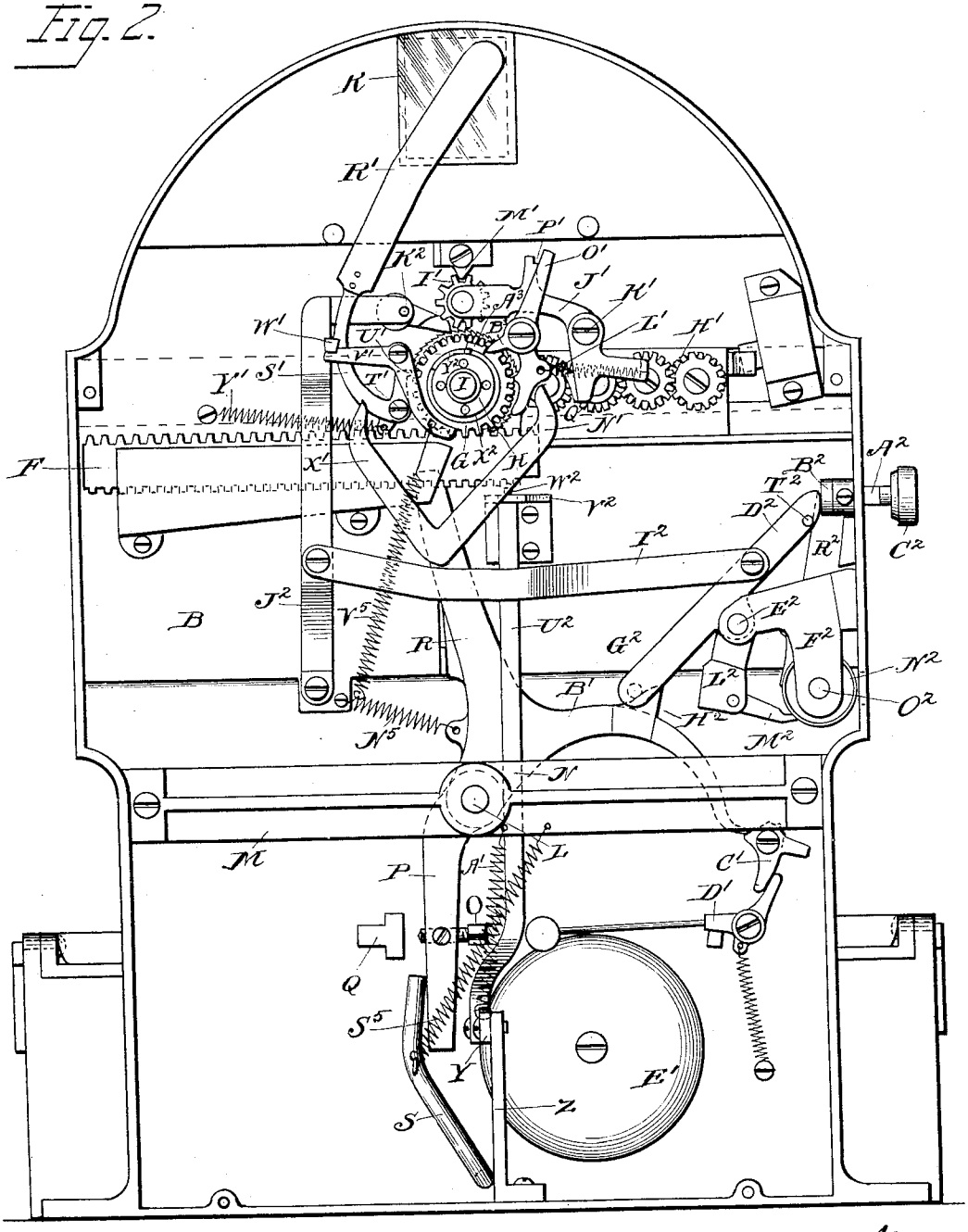

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Fig. 3.

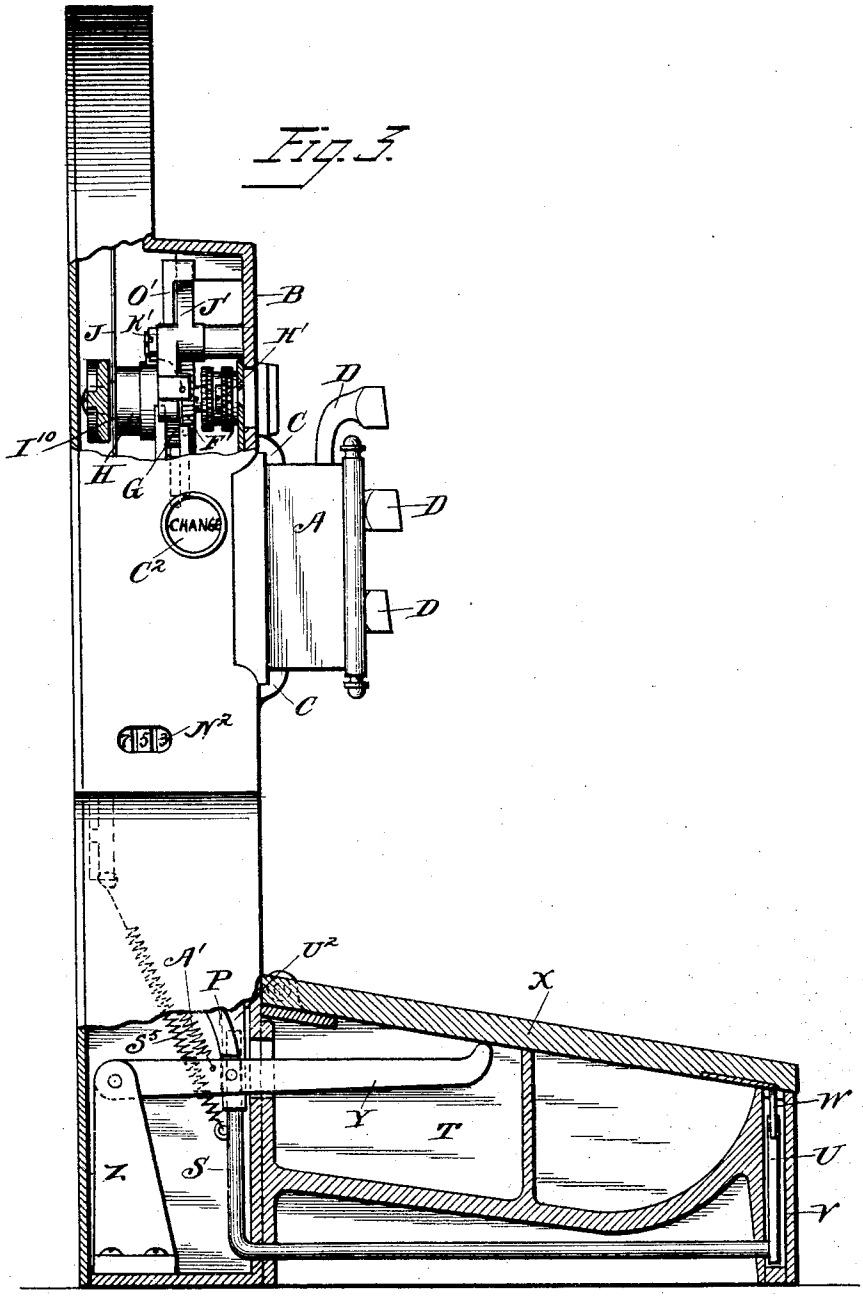

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Fig. 4.

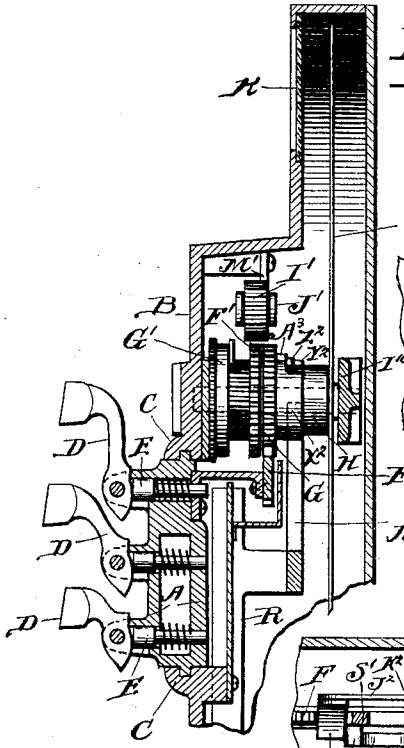


Fig. 5.

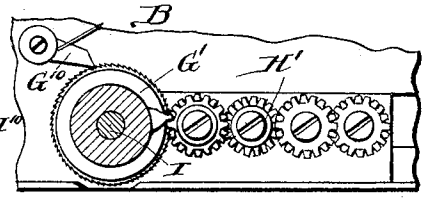


Fig. 6.

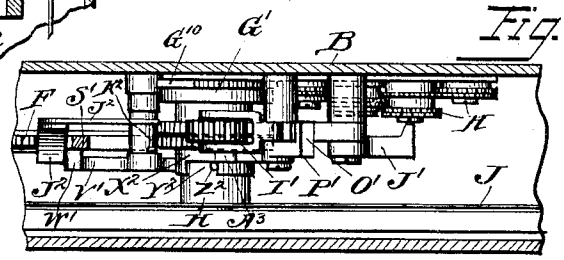
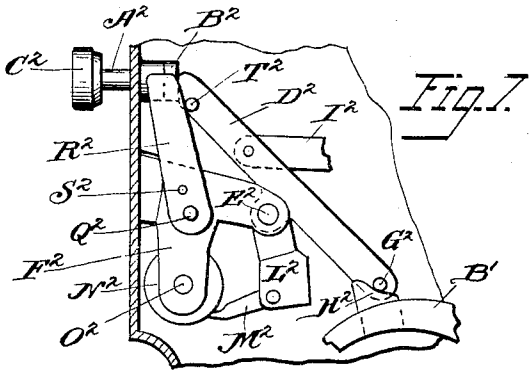


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 600,136, dated March 8, 1898.

Application filed April 13, 1894. Serial No. 507,450. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and useful Improvement in Cash Registers and Indicators, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements upon a machine now upon the market and not of my own invention by which the capabilities of such machine are increased and fraudulent manipulation of it more effectually prevented, all as will be hereinafter more fully explained.

In the accompanying drawings, Figure 1 represents a front elevation of the machine; Fig. 2, a rear elevation thereof, with the back plate and the indicating-dial removed to expose the parts in front of them; Fig. 3, a view of the left side of the machine, partly in section and partly in elevation; Fig. 4, a detail vertical section through the key-frame; Fig. 5, a detail rear elevation of the registering-wheels; Fig. 6, a detail top plan view of the registering devices, and Fig. 7 a detail elevation of the special key and registering-wheels and parts coöperating therewith.

The same letters of reference are used to indicate identical parts in all the figures.

The operating device of the machine consists of a sliding key-frame A, mounted to reciprocate laterally across the front plate B of the machine in guideways C C, at the upper and lower edges of a transverse opening therein, and having pivoted in it three rows of key-levers D, whose finger-buttons bear numbers representing the several amounts adapted to be indicated and registered by them. Mounted in bores in the frame A are a series of sliding stop-pins E, one coöperating with each key-lever. When the upper end of any key-lever is pressed downward, its lower end will force its coöperating pin E rearward against the stress of a coiled spring surrounding it, for a purpose to be described. Secured to the rear side of the key-frame A, in rear of the vertical plane of the front plate B, is a rack-bar F, Fig. 2, the gear-teeth upon whose upper edge mesh with a gear-wheel G, fast upon a hub H, which is loose upon a fixed shaft I, mounted at its front end in the front plate B and at its rear end in a bearing in a cross-bar I^{10}, secured at its opposite ends to the side plates of the casing. The hub H has fast upon its rear end the indicating-dial J, Fig. 4, which dial bears a series of indicating-numbers corresponding to those upon the finger-buttons of the keys, which numbers are adapted to be exposed singly at a sight-opening K in the upper portion of the front plate of the casing. As the key-frame A is slid toward the left the numbers upon the dial will pass in order behind the opening K, and the number to be indicated will be determined by the point at which the key-frame is arrested. Pivoted upon a shaft L, secured at its front end in the front plate of the casing and at its rear end in a cross-bar M, is a three-armed lever N, capable of limited vibration, the extent of its movement being controlled by a set-screw O, passing through the pendent arm P of the lever and adapted to contact with a stop Q upon the rear face of the front plate B. The upwardly-extending arm R of the lever projects at its upper end into the space immediately behind the sliding key-frame A, Fig. 4. It stands out of the path of the rear ends of the stop-pins when the latter are in normal position; but when the front end of any key-lever is depressed and its stop-pin moved rearward the latter will contact with the upper end of the arm R when the key-frame is slid to the left. This contact of the pin with the arm R will vibrate the lever N until the set-screw O contacts with the stop Q and will arrest the key-frame, and the adjustment of the parts is such that when any key-lever is depressed and the key-frame slid to the left until the rear end of its pin E thus contacts with the arm R of the lever N the number upon the indicating-dial J corresponding to the number upon the finger-button of the key will be brought to the sight-opening K and exposed to view. The lower end of the arm P of the lever N coöperates with the upwardly-bent end of a drawer-latch S, which latch consists of a horizontal rod journaled in bearings beneath a cash-box T, which forms the base of the machine and to the rear side of which the front plate of the casing is secured, Fig. 3. A coiled spring S^5 yieldingly holds the rod in normal position. The rear end of the rod

is bent upward, as before stated, to coöperate with the lower end of the arm P of the lever N, while its front end has secured upon it a latch U, extending upward in a suitable opening V in the front wall of the cash-box T and adapted to coöperate with a hook W upon the under side of the hinged lid X of the cash-box. When the lid is closed, the hook W enters the opening V and is caught by the latch U and the lid thereby locked in closed position. When the key-frame is slid to the left and the operated stop-pin caused to vibrate the lever N in the manner before described, the lower end of the arm P of said lever will throw the upturned rear end of the latch-rod S to the right and disengage the latch U from the hook upon the lid, whereupon the latter will be thrown upward by the pressure of an arm Y, which is pivoted at its rear end to the upper end of a standard Z, Figs. 2 and 3, extends forward through a slot in the front plate B of the casing and rear wall of the cash-box, and bears against the under side of the lid and which has connected to it a coiled spring A′, which tends to throw its front end upward when released by the unlocking of the lid.

The laterally-extending curved arm B′ of the lever N coöperates with the trip C′ of a spring-actuated gong-hammer D′, adapted to sound the gong E′ at each vibration of the lever N.

Loosely mounted upon the shaft I immediately in front of the gear G is a second similar gear F′, upon the front end of whose hub is secured the primary wheel G′ of a train of registering-wheels H′. Overlying both of the gears G and F′ is a pinion I′, mounted in the forked end of a lever J′, pivoted at K′. When the pinion I′ is swung into engagement with the gears G and F′, the sliding key-frame becomes geared to the register, so that its movements will be imparted to it. A coiled spring L′, connected to the lever J′ below its pivot K′, yieldingly holds said arm in the normal position shown in Fig. 2, with the pinion I′ disengaged from the gears H and F′ and engaged with a fixed locking-tooth M. When, however, the lever N is vibrated by the contact of the stop-pin of an operated key with the upper end of its arm R in the manner before explained, the upper end of an arm N′, fast upon the arm R of said lever, will strike the lower end of the lever J′ and rock it upon its pivot against the stress of its spring L′ and throw the pinion I′ downward into engagement with the gears H and F′. When the lever J′ is so moved, the upper end of a latch-arm O, to whose lower end one end of the spring L′ is connected, will catch over a shoulder P′ upon the lever J′ and lock the latter in its moved position, with the pinion I′ engaged with the gears. During the return movement of the key-frame to the right, therefore, the primary registering-wheel will be turned with the indicating-dial and will be given the same portion of a revolution that the dial was given in the forward movement of the parts, so that the amount indicated by the dial will be added upon the register. When the key-frame reaches its normal right-hand position, a projection Q′ upon the upper edge of the rack-bar F′ at its left-hand end will contact with the lower end of the latch-arm O′ and throw it back to its normal position, Fig. 2, thereby releasing the lever J′ and permitting the spring L′ to restore it to normal position and disengage the pinion I′ from the gears G and F′, so that at the next forward movement of the key-frame the register will be out of gear with it and remain stationary. In this manner the forward movement of the key-frame turns the indicating-dial to position to indicate the number represented by the operated key, and then the backward movement of said frame returns the dial to initial position and adds such number upon the register.

The primary wheel G′ of the register is provided with a ratchet which is engaged by a spring-pressed pawl G^{10}, Fig. 5, to prevent backward movement of the wheel. Inasmuch as the key-frame is locked in gear with this wheel by the engagement of the latch O′ with the lever J′, which carries the pinion T′, as soon as the key-frame completes its movement to the right it follows that when started to the left on its registering movement it must complete such movement before it can move to the left again, the ratchet on the registering-wheel and the pawl thus acting as an arrester to compel a complete registering movement of the key-frame.

For the purpose of hiding the indicator while it is being returned to normal position and advanced to the new indication, or to show that any number exposed by it during such time is not a proper indication, there is provided a screen-plate R′, carried by a bent lever S′, pivoted at T′ and having a toothed end U′, adapted to coöperate with the gear G. A spring Y′, connected to an arm of the lever S′, projecting below its pivot T′, tends to throw the toothed end U′ of the lever into engagement with the gear G and carry the screen-plate R′ away from the sight-opening K. The lever is held from such movement by a latch-lever V′, the shouldered end of whose horizontal arm coöperates with a lug W′ upon the lever S′ to hold the latter in the position shown. When, however, the key-frame is slid to the left until the lever N is vibrated in the manner described, the upper end of an arm X′, fast upon the arm R of the lever N, will contact with the pendent arm of the lever V′ and vibrate the latter to disengage the shouldered end of its horizontal arm from the lug W′ of the lever S′ and thereby release the latter and permit the spring to throw its upper end to the left and carry the plate R′ away from the sight-opening. At such movement of the lever S′ the toothed end U′ of its short arm will enter one of the notches in the gear G. When the key-frame is slid back

to its right-hand position again and the gear G turned thereby, the tooth U′ will be forced out of such notch in the gear G and the lever S′ and screen-plate R′ thrown back to the position shown and caught and held in such position by the reëngagement of the latch V′ with the lug W′. In this manner at the beginning of the backward movement of the key-frame and indicator the screen-plate R′ is thrown behind the sight-opening and remains there until the key-frame and indicator have been advanced again to a new indication. A coiled spring V⁵, connected to the lower arm of the latch-lever V′, yieldingly holds the latter in operative position.

The parts so far described, with the exception of the lid-opening lever Y and its supporting-standard Z, are substantially the same as the corresponding parts in the machine heretofore referred to as being now upon the market and upon which the improvements constituting my invention are based.

The first one of my improvements consists in the provision of a special key, by which the lid of the cash-box may be released and opened, the alarm sounded, and the screen-plate thrown across the sight-opening without operating any of the register-keys or actuating the main register. Combined with such special key is an auxiliary register for preserving a record of the number of operations of such key. This key consists of a sliding stem A^2, Fig. 2, mounted in a bearing in the left-hand side plate of the casing, provided upon its inner end with an enlarged head B^2 and upon its outer end with a push-button C^2, which in this instance bears the word "Change," indicating that the key is to be operated to open the cash-box for the purpose of making change when no cash has been received or other transaction taken place. The inner end of the key bears against the upper end of a lever D^2, fastened near its middle to the front end of a rock-shaft E^2, journaled in bearings in a bracket-frame F^2, secured upon the side plate of the casing. At its lower end the lever D^2 is provided with a forwardly-projecting stud or pin G^2, which bears against a projection H^2 upon the upper side of the arm B′ of the lever N, heretofore described. When the key is pressed inward to its limit of movement, the lever D^2 will rock the lever N and cause the gong to be sounded and the lid of the cash-box to be released by its latch and thrown open by the spring. A link I^2, connected at its left-hand end to the lever D^2 above its pivotal support, is pivoted at is right-hand end to an arm J^2, pivoted to a fixed support at its lower end and having its upper end bent to the left and provided with a rearwardly-projecting stud K^2, standing in the same vertical plane as the arm S′ of the lever which carries the screen-plate R′. When the key A^2 is pressed inward, the upper end of the arm J^2 will be thrown to the right, and if the screen-plate be at the time in its extreme left-hand position with the indicator exposed the pin K^2 upon the arm J^2 will carry it to the right to the position shown in Fig. 2 and cause its lug W′ to be engaged by the latch V′. In this manner whenever the special key is operated to open the cash-box the indication then exposed is destroyed, so that if a sale should be made corresponding to the indication exposed to view this key could not be operated to sound the alarm and open the cash-box and the customer be made to believe that the machine had been properly operated to register and indicate the amount of his purchase.

The rock-shaft E^2, to which the lever D^2 is secured, has also fast upon it a pawl-arm L^2, in which is pivoted a pawl M^2, spring-pressed into coöperation with the ratchets of a train of registering-wheels N^2, mounted upon a shaft O^2, carried by the bracket-frame F^2. Whenever the key A^2 is pressed in and the shaft E^2 rocked by the vibration of the lever D^2, the pawl M^2 will advance the primary registering-wheel N^2 one number to register such operation of the key.

The lid of the cash-box may also be opened, the alarm sounded, the indication destroyed, and the auxiliary register actuated without operating the special key by sliding the key-frame A to its extreme left-hand limit of movement without depressing any one of its keys D. To this end the frame A has projecting from its left-hand side, immediately above the lower guide C, a lug P^2, Fig. 1, adapted, when the frame is slid to its extreme left-hand position, to contact with a stud Q^2, projecting forward from the lower end of a lever R^2, Fig. 7, pivoted to the frame F^2 at S^2 and bearing at its upper end against a stud T^2 upon the upper end of the lever D^2, before described. It results from this construction that when the reciprocating frame is slid to extreme left-hand position the contact of the lug P^2 with the stud Q^2 will vibrate the lever R^2, which in turn will vibrate the lever D^2 with the same result as when it is vibrated by pressing in the key A^2.

For the purpose of locking the key-frame from movement in either direction while the lid of the cash-box remains open there is provided a vertically-reciprocating locking-rod U^2, Fig. 2, pivoted at its lower end to the lid-opening lever Y, Fig. 3, guided at its upper end in an opening in a bracket-plate V^2 upon the front plate of the casing, and provided with a tooth W^2, adapted to coöperate with locking-teeth and notches upon the under side of the rack-bar F. Whenever the lid of the cash-box is released by its latch and the front end of the lever Y pulled upward by its spring A′, the rod U^2 will be lifted and the locking-tooth W^2 at its upper end engaged with one of the notches in the under side of the rack-bar F and lock the latter, and consequently the reciprocating key-frame, from movement in either direction until the lid is again closed, whereupon the tooth of the locking-rod will be withdrawn from en-

gagement with the rack-bar, and the latter and the key-frame be released.

It will be understood that whenever the lever D^2 is vibrated, either by pressing in the special key or by sliding the key-frame to extreme left-hand position without operating any of its keys, the lever N will be vibrated by the lever D^2, and the arm N′, carried by the arm R of the lever N, will strike the pendent end of the lever J′, which carries the pinion I′, Fig. 2, and if said lever be at the time in the position shown in the drawings, with the pinion I^2 disengaged from the gears G F′, will rock said lever and throw the pinion I′ downward into engagement with the gears, whereupon the latch-arm O′ will catch over the shoulder P′ on the lever J′ and lock the pinion in such position. Now when the special key is operated for the purpose of opening the cash-box, &c., the pinion I′ will be generally engaged with the gears and locked in mesh with them, for it becomes so engaged and locked at the end of the left-hand movement of the key-frame in the ordinary operation of the machine, and the key-frame is left standing in such position until the next operation of the machine, in order that the number upon the indicator representing the last transaction may remain exposed to view. In such instances, therefore, the lever J′ will not be moved by the operation of the special key, the upper end of the arm N′ simply contacting with the pendent end of the lever J′ at the limit of movement of the arm N′.

When, however, the cash-box is opened and the alarm sounded by sliding the key-frame to extreme left-hand position without operating any one of its keys, as heretofore explained, the lever J′ at the beginning of such movement of the key-frame will always stand in the position shown in the drawings, with the pinion I′ disengaged from the gears beneath it, so that the vibration of the levers D^2 and N at the end of the left-hand movement of the key-frame will cause the upper end of the arm N′ to rock the lever J′ and throw the pinion I′ downward into mesh with the gears. If the latch O′ were then permitted to catch over the shoulder P′ upon the lever J′ and lock the pinion in mesh with the gears, the register would be actuated at the return of the key-frame to its right-hand position. Inasmuch as it is not desirable to actuate the register when the key-frame is simply slid to left-hand position to open the cash-box I have provided means for holding the latch O′ out of engagement with the shoulder P′ on the lever J′ when the pinion has been thrown into mesh with the gears, so that as soon as the key-frame begins its return movement to the right and the arm N′ is moved out of contact with the lever J′ the spring L′ will immediately return the latter to normal position and disengage the pinion from the gears. This means consists of a collar X^2 loose upon the shaft I immediately in rear of the gear G and provided with a slot or recess Y^2, in which fits a stud Z^2 upon the hub H, Figs. 4 and 6. This connection of the collar with the hub causes the latter to carry the collar with it, but permits lost motion between them. The collar is provided with a lug A^3, which coöperates with a short arm B^3, fast upon the latch-lever O′. When the key-frame is in its extreme right-hand position, the stud Z^2 will hold the collar in the position shown in the drawings. When the key-frame is slid to its extreme left-hand position, the hub will pick up the collar as soon at the stud Z^2 strikes the opposite wall of the recess Y^2 and carry the collar from that point with it, causing the lug A^3, as the key-frame reaches its left-hand position, to ride under the arm B^3 of the latch-lever O′ and rock said lever upon its pivot, throwing its upper end to the left out of operative position in respect to the lever J′, and maintaining it in such position until the lug A^3 is carried backward again from under the arm B^3. Inasmuch as the lost motion between the collar X^2 and hub H will permit the lug to remain beneath the arm B^3 until the stud Z^2 has traveled through the length of the recess Y^2 in the collar it follows that the latch-lever O′ will not be released until the key-frame has moved some distance toward the right, and inasmuch as at the beginning of its movement its lug P^2, Fig. 1, is withdrawn from contact with the stud Q^2 upon the lever R^2, Fig. 7, and the levers D^2 and N thus released and restored to normal position by the spring N^5, it follows that the upper end of the arm N′ will be carried away from the pendent arm J′ and the spring L′ permitted to restore the lever J′ to normal position and lift the pinion I′ out of engagement with the gears before the lug A^3 is withdrawn from beneath the arm B^3 of the latch-lever O′, and consequently the latter is held from operation while the gear I^2 is moved idly into and out of mesh with the gears.

Having thus fully described my invention, I claim—

1. In a cash register and indicator, the combination of a reciprocating key-frame, a series of keys carried by and movable in said frame, a stop coöperating with the keys to arrest the frame at different points, a cash-receptacle having a movable member, and locking means intermediate the key-frame and said movable member and actuated by the latter to lock the key-frame when the movable member is moved to open the cash-receptacle.

2. In a cash register and indicator, the combination of a reciprocating key-frame, a series of keys carried by and movable in said frame, a stop coöperating with the keys to arrest the frame at different points, a cash-receptacle having a movable member, locking means which as the member is moved to open the receptacle is moved to engage with and lock the reciprocating key-frame, and means